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JPN

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Gerber, E. Examiner: Patel, Vishal A.
Application No.: 10/089,869 Group Art Unit: 3676
Confirmation No: 1433 Docket: 753-13 PCT/US/RCE
Filed: July 8, 2002 Dated: September 27, 2005
For: SEALING DEVICE

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September 27, 2005.*

Signed: Kim Tillman/ *Kim Tillman*

APPEAL BRIEF
PURSUANT TO 37 C.F.R. §1.192

Sir:

This is an appeal to the Board of Patent Appeals and Interferences from a decision mailed January 27, 2005 wherein the Examiner finally rejected claims 3 and 5. No claims of this application have been allowed. Appellants have timely filed a Notice of Appeal by certification on July 27, 2005. This Brief is being filed in support of that Notice of Appeal. As required by 37 C.F.R. §1.192, this Brief is being filed in triplicate. The fee for filing; this Brief of \$250.00, and the Notice of Appeal and Extension of Time of \$760.00, which was omitted at the time of filing the Notice of Appeal, is provided by enclosed check. Please charge any additional fees or credit any overpayments to Deposit Account No. 08-2461.

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01 FC:2402 250.00 OP
10/03/2005 TBESHAH1 00000021 10089869
02 FC:2401 250.00 OP
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I. REAL PARTY IN INTEREST

The real party of interest in the present appeal is Rego-Fix AG, Inc., assignee of the entire right, title and interest in and to the above-identified application.

II. RELATED APPEALS AND INTERFERENCES

No related appeal or interferences are presently pending which are known to Appellants, Appellants' legal representative, or assignee which will directly affect, be directly affected by, or have a bearing on the Board's decision on this Appeal.

III. STATUS OF THE CLAIMS

Claims 3 and 5 are pending and stand finally rejected in this application. The rejection of claims 3 and 5 is being appealed.

Claims 3 and 5 stand rejected under 35 U.S.C. §103(a) as being unpatentable over CH 684938 A5 to Gerber in view of Patent No. 5,617,879 to Kubala (hereinafter "Kubala").

IV. STATUS OF AMENDMENTS

The Examiner finally rejected the claims of the above-identified application in an Office Action mailed January 27, 2005. A Response was filed on March 28, 2005, (March 27, 2005 being a Sunday) under the two-month rule. In Advisory Action mailed April 11, 2005, the Examiner No further response has been presented since the final rejection.

V. SUMMARY OF THE INVENTION

The invention defined by the claims on appeal relates to a sealing device for external sealing of a collet chuck housing wherein the sealing device includes an annular circumferential groove with an elastic sealing body disposed therein. More specifically, the present invention as defined by the claims provides a sealing device for sealing a rotating machine tool against coolant leakage. The sealing device having a washer with a circular opening for the tool shank, the opening defining a cylindrical surface with an annular groove in it and being dimensioned such that an open annular gap exists between the cylindrical surface and the tool shaft through which open space coolant can flow into said groove and build up pressure therein, an elastic sealing body disposed in the groove and embracing the tool shaft, wherein the groove is wider and deeper than the cross-section of the elastic sealing body such that the sealing body is pressed by coolant against a side wall of the groove.

Exhibit 1, shows an enlargement of Figure 2 of the application for the present invention having annotations for depicting the forces exerted by the coolant against the o-ring. It can be

seen that without pressure there is no sealing effect, i. e. the passage through gap 6, around the o-ring 8. However when coolant under pressure is entering through gap 6 into the groove 7 the o-ring is moved towards and pressed against the side wall and towards the shaft.

VI. ISSUES ON APPEAL

The issues on appeal are as follows:

1. Whether claims 3 and 5 are unpatentable under 35 U.S.C. §103(a) as obvious over Gerber in view of Kubala.

VII. GROUPING OF CLAIMS

Claims 3 and 5 should be considered as one grouping.

For the purposes of the present Appeal, it is respectfully submitted that independent claim 3 meets the statutory criteria for patentability. The patentability of the dependent claims will be predicated thereon.

VIII. ARGUMENTS

A. REJECTIONS UNDER 35 U.S.C. §103

1. The rejection of claims 3 and 5 as being obvious over Gerber in view of Kubala

GERBER

In the Office Action of January 27, 2005, the Examiner stated that Gerber inter alia discloses (cf. Par.2 of the Detailed Action): (i) "the sealing body is pressed by coolant against a side wall of the groove" and (ii)"through which open space coolant can flow into the groove and build up pressure therein". Applicant respectfully submits that both interpretations of Gerber are incorrect.

Gerber discloses that the O ring is pressed by the coolant towards the tool shaft and not against the side wall of the groove. Moreover Gerber does not disclose that the space between the opening of the washer and the tool shaft allows the coolant to flow into the groove and build up pressure therein. Firstly, the pressure would be built up between the shaft and the O ring, thereby pressing it away from the shaft rather than towards the shaft and thus weakening the sealing effect and, secondly, if a tool shaft of maximum diameter is inserted as shown in Fig. 1 b of Gerber, there is no space between the washer and the shaft.

The Examiner is further asserts that Applicant has argued "...that Gerber uses the pressure to push the o-ring away from the shaft...". Applicant submits that this is an incorrect reading of Applicants arguments. Applicant does argue that if Gerber used pressure to push the o-ring away from the shaft, the sealing effect would be weakened.

Exhibit 2, attached hereto shows an enlarged Figure 1a of Gerber with annotations to show the coolant path and pressure effects. Without any coolant action the o-ring is sealing the gap 14 against leakage. However with increasing rotational speed the effect of the centrifugal force on the o-ring would result in the sealing effect being weaker. Therefore Gerber proposes an additional enhancement of the sealing effect based on the coolant pressure. In the specification of Gerber it is explicitly mentioned (Col.4, lines 6 ff.) that there flows:

"a further part (of the coolant) ... to the bore (6) and the gap (14) closed by the sealing ring. The coolant (8a) impinges from two sides onto the sealing ring (4), whereby the side facing away from the tool shaft passage opening (2a) constitutes a much higher pressure exposure for the coolant (8a) so that the sealing ring is even more pressed against the shaft..."

From this description in Gerber it is clear that the coolant pressure through gap 14, if it occurs with a narrow shaft, is undesirable. With wider shaft it would anyway not occur.

KUBALA

With regard to Kubala, the Examiner assesses that "an open annular gap exists between a cylindrical surface and the tool shaft to have coolant pressure that provides force to the elastic sealing body...".

Exhibit 3, attached hereto shows and enlarged Figure 3 of Kubala with annotations to point out the sliding seat area. The enlarged Figure 3 shows the configuration of Kubala. Kubala discloses a sealing ring 89 in a groove 91 formed in the inner surface 37b of a side wall. A carrier 40 with its outer surface 76 a is sliding in a passage way which is defined by the surface 37b. The sealing arrangement is designed to prevent leakage between the surfaces 76a and 37b. As these surfaces are in contact with each other to form sliding seat there is of course no open gap between them. The so-called gap 88 is in fact due to the usual tolerances in a sliding seat and would of course give way to a certain leakage, similar to oil or grease leakage from a lubrication film in a sliding bearing. However, no pressure could be built up in the groove through such a "gap". Moreover the sealing ring is moved only by the axial movement of the carrier 40 into the operated engagement position. (Col. 7, lines 32 ff.) and not by coolant pressure.

Thus, the Examiner interpretation of Kubala relies on hindsight to interpret the disclosure as including a "gap". There is no open annular gap, no tool shaft or coolant

pressure providing force to the elastic seal. In view of the entirely different conditions for a collet chuck of a machine tool and a stationary coolant system Motivation to look to Kubala is lacking in the body of its disclosure, therefore, the Examiner has failed to make a *prima facie* case of obviousness.

SUMMARY

Gerber discloses a sealing device for a tool holder of a machine tool featuring a sealing ring located in a groove in the inner cylindrical wall of a sealing washer. The groove is deeper than the diameter of the sealing ring to form a chamber behind the sealing ring. At least one hole connects this chamber with the interior of the tool holder. Through this hole coolant pressure builds up in the chamber to press the sealing ring against the tool shaft to achieve an additional sealing effect.

In contrast to Gerber however, the present invention as claimed includes a groove in the sealing ring wider than the diameter of the sealing ring.

To make the groove wider than the diameter of the sealing ring would not be obvious from Gerber, because this would seem to contradict the function of Gerber. In the configuration of Gerber the chamber behind the sealing ring which is closed except for the coolant input holes is compulsory. The present invention as defined by the claims does not include a closed chamber. In contrast, the groove according to the present invention, provides open space all around the sealing ring as long as no pressure is applied.

The Examiner concludes that it would be obvious to refer to Kubala for improving the sealing function of Gerber. However, Kubala belongs to an entirely different field of art. The present invention deals with the sealing of a tool holder and tool having rotational speeds of up to 50,000 rpm. The sealing system disclosed in Kubala is fixedly mounted and does not rotate at all. Moreover, Kubala shows the sealing of an axially movable "carrier" with one given diameter rather than the sealing of tool shafts having different diameters. Thus, one skilled in the art would not have looked to Kubala in combination with Gerber to arrive at the present invention.

Even however if Kubala would have been taken in consideration, it would immediately have been dismissed, because the narrow sliding seat of the carrier would never allow pressure built-up in the annular groove. Additionally, due to the backup ring 90 of Kubala the sealing ring would be prevented from being pressed into the corner between the carrier and the side wall of the groove.

It is therefore respectfully submitted that claims 3 and 5 are patentably distinct over the cited reference and reversal of the Examiner's Final Rejection thereof is warranted.

Applicants: Gerber, E.
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Page 10

IX. CONCLUSION

For the factual and legal reasons set forth above, it is respectfully submitted that the application, including claims 3 and 5, is in condition for allowance. Reversal of the Examiner's final rejection is believed to be warranted.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Stephen Cannavale".

Stephen Cannavale
Registration No. 44,585
Attorney for Applicant(s)

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CLAIMS CURRENTLY ON APPEAL

Claim 3. A sealing washer for sealing a rotating collet chuck arrangement of a machine tool against coolant leakage, the washer having a circular opening for the tool shank, this opening defining a cylindrical surface with an annular groove in it and being dimensioned such that an open annular gap exists between the cylindrical surface and the tool shaft through which open space coolant can flow into said groove and build up pressure therein, an elastic sealing body disposed in the groove and embracing the tool shaft, wherein the groove is wider and deeper than the cross-section of the elastic sealing body such that the sealing body is pressed by coolant against a side wall of the groove.

Claim 5. A sealing washer according to claim 3, wherein the collet chuck arrangement includes a tensioning nut wherein said sealing washer is attached to said tensioning nut.



NEW INVENTION

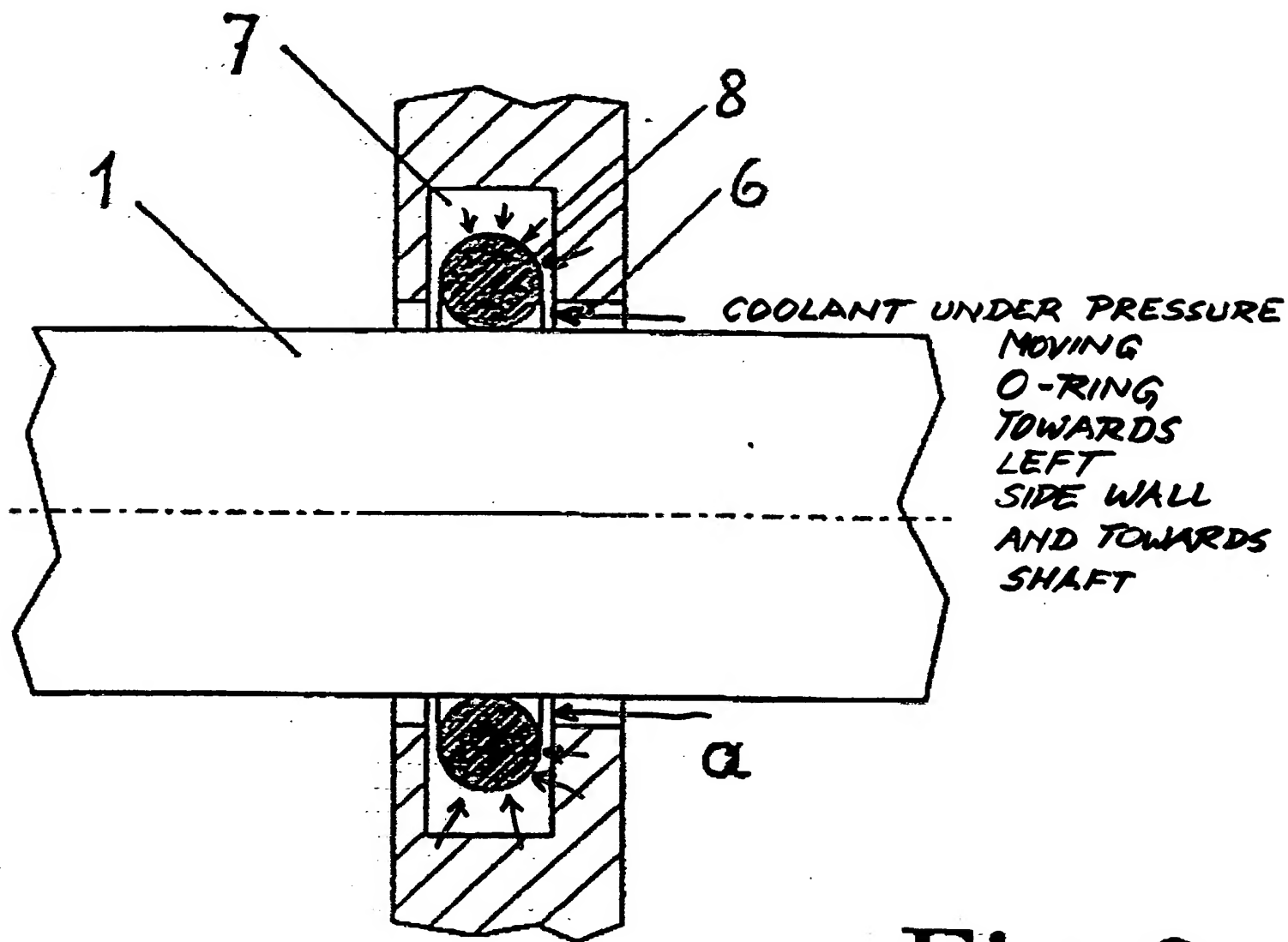


Fig. 2



(2) KUBALA

NO OPEN GAP (SLIDING SEAT)
COOLANT LOSS LEAKAGE POSSIBLE
NO PRESSURE BUILT-UP POSSIBLE!

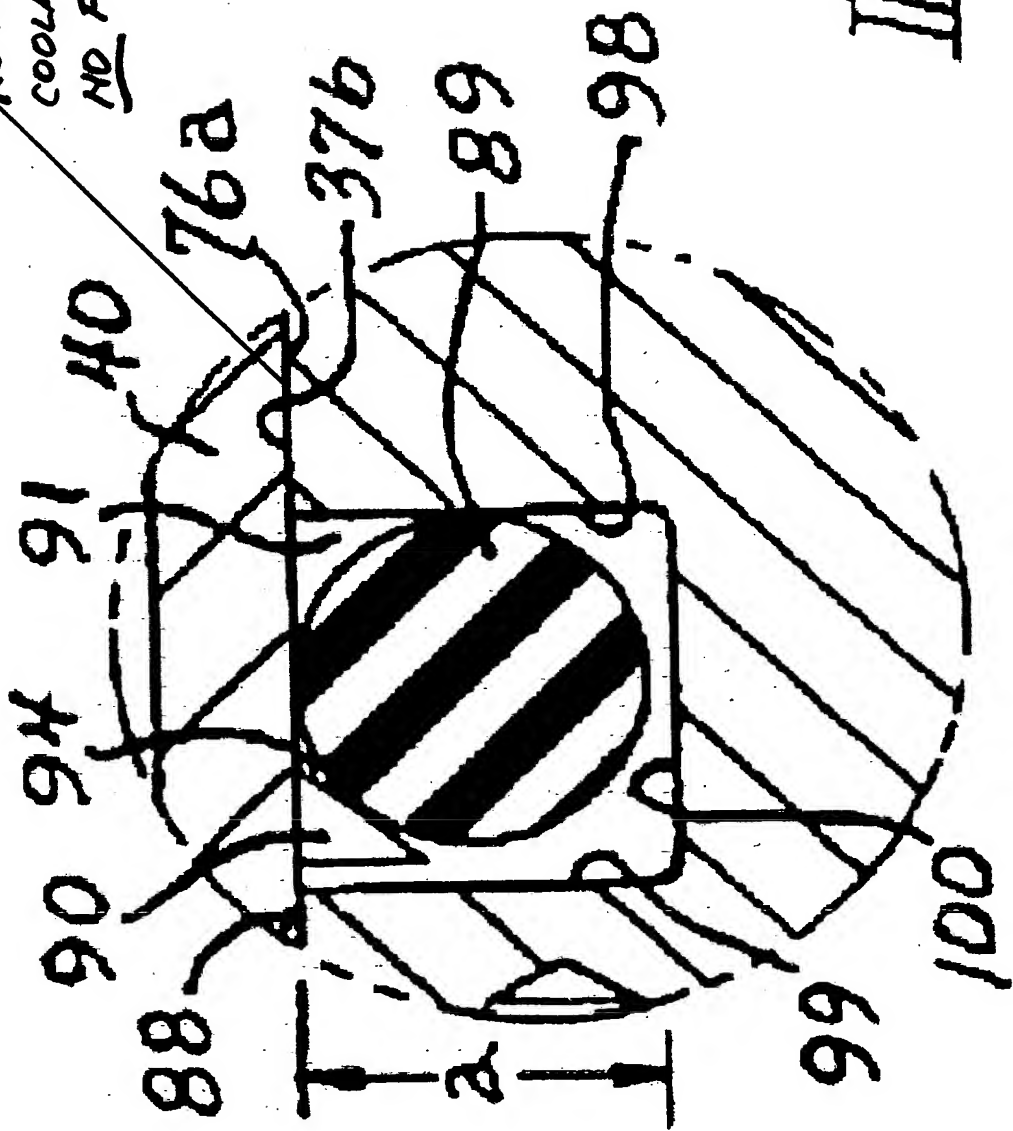


FIG. 3

Applicant: Gerber, et. al.
 Serial No: 10/089,869
 Examiner: Patel
 Certificate of Mailing Dated: 7/27/05
 Express Mail Label No.: _____
 Filing Date: 7/8/02
 Art Unit: 3676
 Attorney Docket: 753-13 PCT/US/RCE
 Confirmation No.: 1433

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Docket Number (Optional)

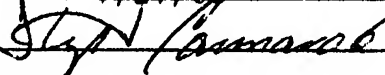
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on

7/27/05

Signature

Typed or printed
name

Stephen Cannavale

In re Application of

Gerber, et. al.

Application Number

10/089,869

Filed

7/8/02

For

Sealing Device

Art Unit

3676

Examiner

Vishal A. Patel

Applicant hereby **appeals** to the Board of Patent Appeals and Interferences from the last decision of the examiner.

The fee for this Notice of Appeal is (37 CFR 41.20(b)(1))

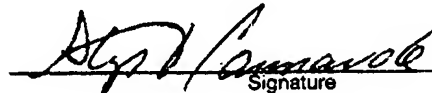
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\$ 250.00

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I am the

☐ applicant/inventor.☐ assignee of record of the entire interest.
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.
(Form PTO/SB/96)☐ attorney or agent of record.
Registration number☐ attorney or agent acting under 37 CFR 1.34.
Registration number if acting under 37 CFR 1.34.

Signature

Stephen Cannavale

Typed or printed name

(973) 331-1700

Telephone number

44,585

7/27/05

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.☐ *Total of forms are submitted.

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Serial No.:	10/089,869	Group Art Unit:	3676
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For:	Sealing Device		

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PETITION FOR EXTENSION OF TIME

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Pursuant to 37 C.F.R. 1.136(a), an extension of time of

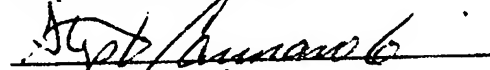
one month	<input type="checkbox"/>	\$ 120.00	Small Entity	<input type="checkbox"/>	\$ 60.00
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- ☐ other (specify) _____

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Respectfully submitted,


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